

SO

AUTUMN | WINTER 2021

GAMING GLORY
Celebrate 50
Years Of Gaming

SAFE SPACE
Wake Up To
Cybercrime

CATALYST 2021
Get To Know
New Gamechangers

Reasons to be cheerful

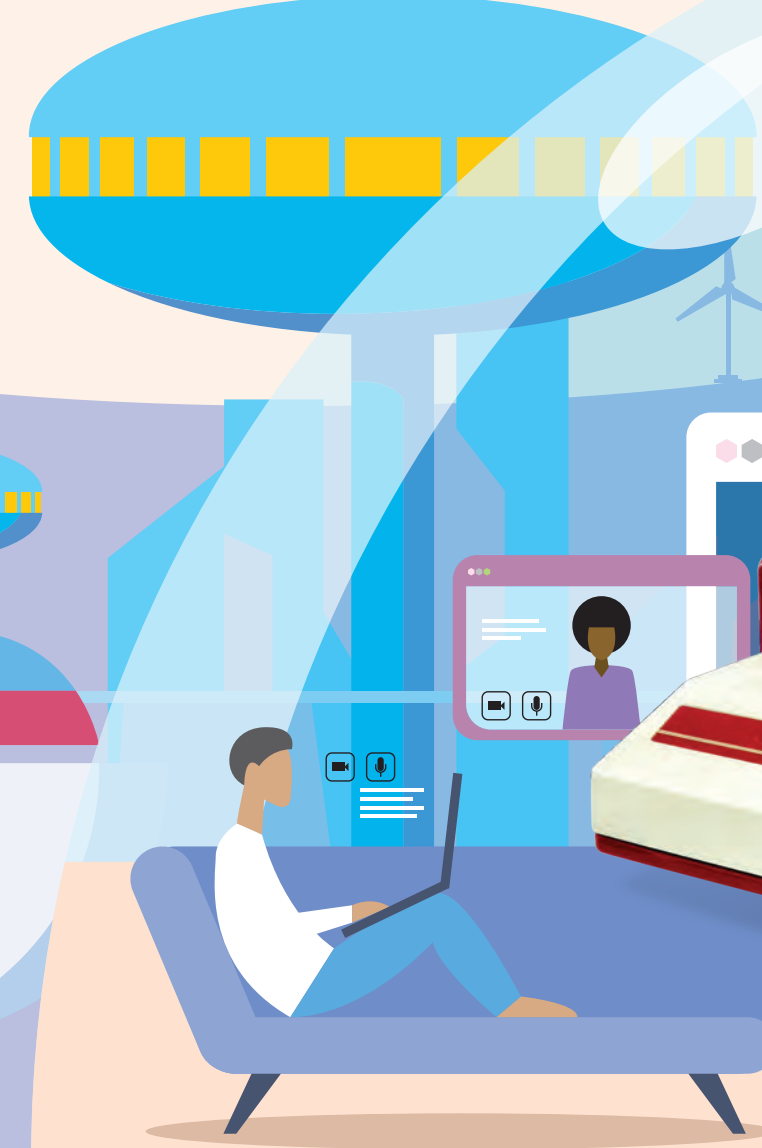
Highlights and analysis from the
Tech Nation Report 2021



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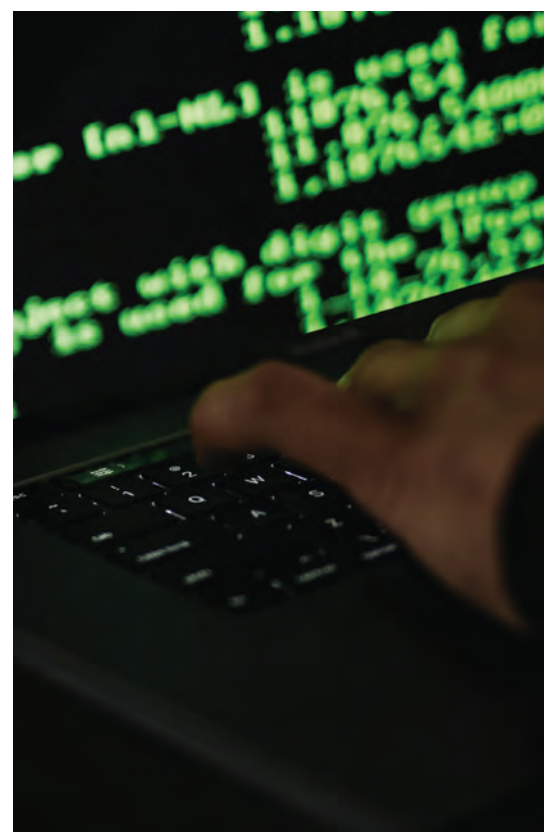
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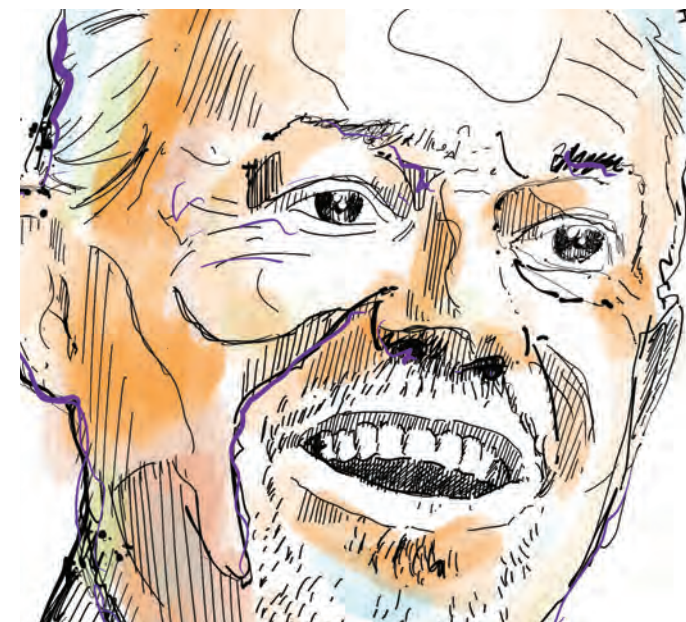


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Something to
shout about?

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SO...

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Welcome to **SO**

Some 50 years since the plea to “Think Global, Act Local” was coined by Friends of the Earth, it has never been more pertinent, or urgent. Would campaigners back then have envisaged that we’d still be debating the why, what, when and how of acting for the environment half a century later?

And yet, as I write this just days before the UK hosts 120 world leaders for the highly anticipated United Nations Climate Change Conference (COP26), and in the wake of various climate-fuelled human and environmental tragedies, it’s surely clear to us all that there’s still a lot of thinking – and acting – needed.

While we wait for strategic direction, revised targets and specific action plans to filter down from the UN event and government taskforces, it’s what we do on the ground, here and now, that will deliver the necessary impacts.

Nationally, there’s the rally cry to ‘Build Back Better’. Regionally, forging a green pandemic recovery is central to Hampshire’s economic plan. Locally, I’m pleased to say, we’ve got a lot of good things happening too.

I was pleased to see entrepreneurs with some ingenious, sustainability-oriented ideas applying to our Catalyst business accelerator programme this year, and you can read more about these ideas in this issue. We were also delighted to facilitate a carbon-offset

tree planting initiative for sustainability-focused resident business, Absolar, to help them live what they preach.

We are ourselves accelerating the pace of sustainability across the Science Park estate, putting more investment and resource into transport solutions and alternative energy, including solar panel installations planned for buildings such as our new Engineering Centre. This new facility will also house the Future Towns Innovation Hub, designed to enable world-leading engineering research excellence from the University of Southampton to collaborate with commercial partners to solve some of our greatest environmental challenges.

Alok Sharma, COP President-Designate, has said, “Over the last 30 years British governments have grown our economy by 78% while cutting emissions by 44%. That shows green growth is real. In 2012, 40% of our electricity came from coal. That figure is now less than 2%. That shows that change is possible.”

As an engineer working in the entrepreneurial sphere, ‘real’ and ‘possible’ is what I’m interested in: how we build on proven technologies, knowledge and experience with brave, inspirational, out-of-this-world ideas that will shape our future.

Dr. Robin Chave
Chief Executive Officer
The University of Southampton Science Park

“I’m interested in how we build on proven technologies, knowledge and experience with brave, inspirational, out-of-this-world ideas that will shape our future.”

what?

SO sees the future differently

SO connects

SO asks questions

SO engages, informs, inspires

SO celebrates success

SO shows how Southampton Science Park shapes society

SO makes science and technology social

SO shines on South Coast excellence

SO where could it take you?



GROWTH

THE MULTIPLIER EFFECT



SETsquared has worked with >6,500 companies, raised nearly £2bn in growth investment and boosted the UK economy by nearly £7bn.

SETsquared Southampton membership is now available, opening up a wide range of benefits for innovative companies with their sights set on growth.

The SETsquared Partnership is recognised as the global number one university-linked business growth incubator in the world. A partnership of six research-intensive universities – Bath, Bristol, Cardiff, Exeter, Southampton, and Surrey – it exists to give knowledge-based companies the support they need to become global leaders.

Now, companies across the Solent region can benefit from this world-class, reputation-enhancing organisation through membership of SETsquared Southampton.

Through membership, you’ll be joining the ranks of companies like Accelercom, Fresh Relevance, Ilika, Nquiring Minds, Primer Design, RedLux, Symmetrica and Utonomy: regional success stories that have all worked within the SETsquared framework.

- SETsquared Southampton membership opens up:
- Access to local and national SETsquared business support programmes and workshops.
 - The opportunity to participate in a SETsquared Investor Showcase event. Companies will be provided with coaching and support in preparation for their pitch.
 - An annual Business Review Panel. A hand-picked panel of experienced business mentors and experts review and challenge businesses to provide strategic and practical advice.
 - Up to 12 hours one-to-one business coaching per year on an ad-hoc basis.
 - Invitations to exclusive SETsquared and Southampton Science Park networking and business support events.
 - The ability to apply for SETsquared Southampton’s Business Growth Programme: targeted intervention projects, funded up to £5,000, to address specific barriers to accelerate growth.

Membership costs just £100+VAT per month.

To become a SETsquared Southampton Member, simply email details of your business to: setsquared@science-park.co.uk or call 023 8212 6580.

Reasons to be cheerful

Highlights and analysis from the Tech Nation Report 2021

Since 2015, the Tech Nation Report has put the UK's innovation sector under a microscope, sought to identify trends, challenges and opportunities, and shine a light on its top performers.

Published on the back of seismic social, political, economic and environmental shifts, its 2021 report, **The Future UK Tech Built**, is like none that have come before. How have our technology businesses fared as we've navigated out of the European Union and a global pandemic, and how will the sector build back in a way that delivers benefit for everyone?

If you're expecting a tale of doom and gloom from this year's tech state of the nation report, think again. There are many reasons to be cheerful.

Let's start with the role of technology in our economy, before looking at patterns in investment, sectors and the workforce.

Economy

- Tech is becoming more important for the UK economy, growing by 7% on average each year since 2016. Its gross value added (GVA) contribution to the UK economy increased from £104bn in 2010 to £149bn by 2018.
- Our tech start-up and scale-up ecosystem is valued at \$585bn. That's 120% more than in 2017, and more than double the next most valuable ecosystem, Germany, at \$291bn.
- The UK is officially the tech unicorn capital of Europe. 7 new unicorns (a private company valued at more than \$1bn) joined the hallowed ranks in 2020 taking the national total to 80, more than France and Germany combined.

This growth is in spite of, and partly in reaction to, a highly uncertain economic climate, as Kieran Hill, Partner at Ascension Ventures, expands: "2020 was an unquestionably transformative year for the UK tech ecosystem. The entire workforce was thrust into working out of bedrooms and living rooms, and a complete reliance on technology to keep everyone communicating, collaborating and building, which saw digital transformation accelerated 10x quicker than even the biggest proponents were predicting in 2019. This led to a whole new generation of start-ups being created, built completely remotely from day one and redefining the playbook for how they raised money, hired talent and marketed their products and services."

Investment

- Venture capital investment into UK tech now ranks third in the world after the US and China, hitting a record high of \$15bn in 2020.
- UK tech remains an attractive proposition for international investors: some 63% of investment comes from overseas, that's a 50% increase since 2016.

In a global context, there have been some interesting shifts in investment patterns. As VC investment in the US (San Francisco and New York specifically), and in the UK have risen, China and India have both reported decreases. London has now pipped Shanghai into fourth place as most investable tech city, attracting \$10.6bn in 2020. While the all-permeating pandemic of uncertainty stalled investment in the first half of 2020, this trend was reversed in the second.

Tech and consumer internet firms accounted for 40% of all the capital raised through initial public offerings (IPOs) on the London Stock Exchange in 2020. They raised £7bn in follow-on capital, enabling them to acquire and invest at scale and speed, demonstrating how listed companies can draw on investor support to finance ambitious growth strategies.

Sectors

- Perhaps unsurprisingly, companies operating within the health arena dominated investment in 2020, raising \$65bn globally.
- Impact tech – companies working to solve social or environmental challenges – has seen a surge of investment. In the UK, there has been a 160% increase in investment in this space.
- Investment in UK deep tech rose by 17% in 2020, the highest rate of growth globally.

Looking at the spaces that investors regard as the worthiest recipients of their attention, health and transport technology top global rankings, attracting 19% and 13% of venture capital respectively.

However, it looks like there are shifts on the horizon with UK companies in the deep tech and impact tech space ruling the waves: good news as this suggests that financiers are in it for the long haul and have a newfound appetite for greater risk and reward. This approach positions R&D intensive enterprises and university collaborations, as well as sustainable ventures, at the centre of our future economy.

2020 was also a transformative year in terms of boosting the standing of EdTech (\$13bn investment, up \$5bn yoy); CreaTech including IT, software, games, film and TV (\$16bn investment); Health and Wellness (\$38bn) in a year that highlighted the importance of physical and mental health; and Climate/Agriculture Tech (receiving \$26bn in investment, up from \$18bn in 2019).

The use of primary technologies is pivotal when building new innovative platforms. Artificial intelligence and machine learning, now key foundations, are good examples: across Europe, 91% of deals with 'Big Data' companies used AI and ML. Robotics and drones, augmented reality and virtual reality, Internet of Things, blockchain and cryptocurrency feature heavily too.

People

- Tech has a marginally higher proportion of BAME people than the labour market as a whole: 15.2% in the sector, compared to 11.8% for all occupations.
- There is an overrepresentation of people under 35 years of age, at 42% compared to 39.5% for the labour market as a whole.
- Whilst 49.8% of workers in the labour market as a whole are women, in tech, it's half that, at 25.5%.

Sourcing the right talent is of course an important factor when scaling a business. Accessing those with digital skills is becoming a pivotal factor in enabling a business to increase productivity and build better customer relationships.

In 2020, the number of unique tech jobs advertised per month in the UK outweighed that of key countries in Europe by 259% on average. 391,532 unique tech jobs were advertised, with software developers topping the list.

If there is a cloud over the UK tech space, its diversity. There is still a large gender and ethnicity gap within tech companies and a lack of investment given to diverse founders. Only 3% of VC seed, early- and late-stage funding went to all female teams, whereas all male teams received 68%.



(L to R) Mark Spearing, Jane Holt, HM Lord-Lieutenant of Hampshire Nigel Atkinson, Robin Chave

Welcoming the Lord-Lieutenant

Southampton Science Park was delighted to facilitate a tour and visits to some of its leading light companies for the Queen's representative, HM Lord-Lieutenant of Hampshire, Nigel Atkinson Esq.

On 9th September 2021, HM Lord-Lieutenant of Hampshire Nigel Atkinson visited Southampton Science Park for a tour in the company of Chairman Mark Spearing, CEO Robin Chave, and Business Development Director Jane Holt.



Promega, a global leader in life sciences, has had a UK base at Southampton Science Park since 1989, occupying leased office and laboratory space until mid-2019 when it invested in purpose-built premises to facilitate expansion and opportunities for staff.

Mr Atkinson said: "Having attended Southampton Science Park earlier this year to present Tonic Analytics with a Queen's Award for Enterprise, I was keen to return to explore further and learn more about the innovative companies based there, and I wasn't disappointed. I met with start-up Maverick Aviation, a fast-growing enterprise AudioScenic, a European company Tekever, and global organisation Promega. It's clear to me that these exciting businesses, along with the others that choose the Science Park as their business home, have an enviable place to work and limitless opportunities to progress within this vibrant community."



Tekever chose Benham 5, the newest multi-occupancy addition to the Science Park estate, as its UK head office. The company specialises in advanced aerial unmanned vehicles and inter-satellite and ground communications for civilian and military markets.

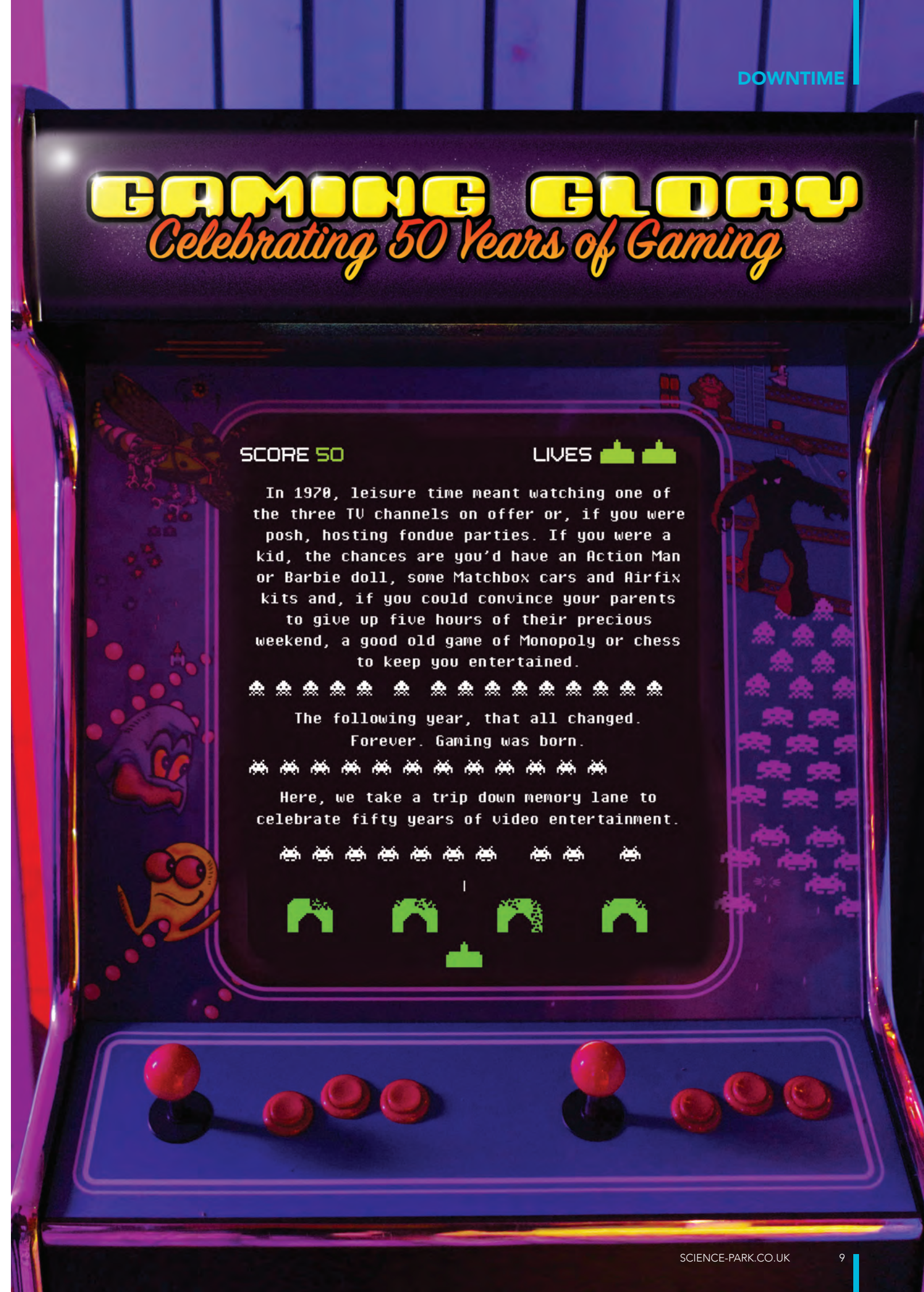


AudioScenic, a former Catalyst company, is now based in Epsilon House in specially soundproofed space. Having attracted £1.5m investment and secured contracts with global household names, this business, which specialises in 3D audio technology, is one to watch.

Robin Chave commented: "It was a great pleasure to welcome the Lord-Lieutenant back to the Science Park and I was proud to demonstrate to him how we create the foundations for successful businesses and support their growth every step of the way. It was clear that Mr Atkinson was inspired by the companies he visited, all of whom amply demonstrate the role that the Science Park plays in the UK's innovation ecosystem. For the companies based here, it's not just a business journey but a property journey as we create the capacity to build teams from desk space through to bespoke headquarters."



Maverick, a pre-revenue start-up with great potential, came to the Science Park in 2020 to participate in the Catalyst business accelerator programme and then took flexible desk space in the Innovation Centre to work on its personal aerial mobility systems.





'70s: Arcade Dreams

Nolan Bushnell and Jim Stein, students at the Universities of Utah and Stanford respectively, were both players of a uni lab game called Spacewar! This experience, and that of Nolan's through working at amusement parks, sparked an idea to make an arcade video game. In August 1971, their game **Computer Space** – a space shooter game contained in a fibreglass cabinet – was released, sparking a million more ideas...

A decade of experimentation with this new concept followed. Bushnell went on to co-found Atari in California in 1972, bringing the wonderfully two-dimensional table tennis legend that is **Pong** to market that year.

In 1978, Japan woke up to the opportunity, releasing **Space Invaders**. This caught on so quickly that 60,000 Space Invader arcade machines were exported to the United States within the year.

By 1975, gaming was beginning to make its move from the arcade into homes. Atari had adapted Pong to create a version that could be played at home and, in 1979, Mattel brought a home games console called **Intellivision** to market.

'80s: Homeward Bound

Despite the domestic opportunity, arcade games continued to rule supreme in the neon-filled, synthesised audio glory days of the 80s that brought us **Tetris**, created by Soviet software engineer Alexey Pajitnov, and **Pacman** which became the best-selling arcade game of all time. Indeed, market saturation and waning interest in home gaming (largely as a result of badly developed, fast-to-market games), saw revenues drop from \$3.2bn in 1983 to just \$100m in 1985.

And then Nintendo happened, reversing the home gaming decline and moving the industry in new directions. The Japanese creatives pushed the boundaries of the player experience by creating more lifelike characters with the introduction of Mario, surely the most famous plumber ever outside of Pimlico. After first making an appearance in **Donkey Kong** in 1981, Mario became the star of the show along with brother Luigi with the launch of **Super Mario Bros** in 1985.

The same year, the **Nintendo Entertainment System** (NES) which was renamed from the Family Computer, or Famicom, was unveiled in North America. It sold 61.9m units. Nintendo followed up with the first handheld games console, **Game Boy**, in 1989.

'90s: Serious Stuff

Now twenty years since Computer Space, the gaming market had matured beyond early-adopters and it continued to be an exhilarating space for both developers and consumers. The gaming experience reached a new dimension as characters were now created in 3D while a new generation of graphic cards coupled with higher computer processing speeds inspired endless opportunities.

But was it still fun? **Mortal Kombat**'s release in 1992 shocked families around the world because of its lifelike graphic violence. Its developers Midway were called to a hearing at the United States Senate the following year to discuss video game violence. As a result, Sega of America introduced the Videogame Rating Council to age-rate all video games that were released for sale in the US and Canada: this would later become the industry-wide Entertainment Software Rating.



The same decade saw the release of **Warcraft** and **Doom**, pioneering the idea of the first-person shooter which remains the most popular gaming genre today. Off-screen, it was war too, as Sega battled Nintendo for industry supremacy, pitching **Sonic the Hedgehog** against Mario to win over the hearts and minds of families around the world.

Eager to enter the marketplace at this point, Sony joined forces with Nintendo to release **PlayStation**. By the time of its launch at the Electronic Entertainment Expo in 1995, they had pre-sold over 100,000 units. Sales spiralled to 7m worldwide within a year, signalling the widespread adoption of CD-based media.

A pivotal point in the '90s was when games infiltrated the burgeoning mobile phone market. While Tetris had made an appearance on an early handset, it was Nokia that pulled a masterstroke by pre-loading **Snake** onto its popular 6610 handset in 1997. Now games could be played anytime, anywhere.

'00s: Cloud Bound

Although well established, it wasn't until the noughties that the internet was powerful enough, or affordable enough for many, to support a good gaming experience. When it could, it took the genre to a whole new level and whole new audiences. Cue the advent of multiplayer, roleplaying games offering a different kind of social interaction in alternative worlds.



Published by Electronic Arts at the turn of the century, **The Sims** was the first example and, just a few years later, **WoW** (**World Of Warcraft**) had lured 12m active players into its fictional world.

By this time, hardware development began to drive the market. In 2001, Microsoft released its **Xbox** console which came with its flagship title **Halo: Combat Evolved**. Its 2004 sequel, Halo 2, was the real revolution though, because it brought with it the Xbox Live marketplace. Not to be outdone, Nintendo followed quickly to compete with **Wii**, making use of motion controls to play sports-like games, perhaps in a bid to address growing social concern about the health impacts of extensive indoor game play.

'10s: Big Bucks

Technologies such as smartphones, virtual reality and augmented reality begin to drive game hardware and gameplay development now and with these, the rise of independent developers and start-ups using crowdfunding to bring their ideas to market.

One such example is **Minecraft**, created in Sweden in 2011 without the need for flashy graphics or a storyline. A sandbox game – one that has no specific goals to accomplish and therefore allows players freedom to choose how they play – this moved gaming into education. Hundreds of schools around the world use an education edition to help teach topics as diverse as physics, geology, drama, art, electronics and sustainable farming.

At this time, gaming events came of age too, with **Esports**. These made a profession out of gaming, giving the world's best an opportunity to compete for prize money, and amateurs an opportunity to participate through live or streamed spectatorship. One of the most successful esports athletes known to date is Lee Sang-hyeok (aka Faker) whose skills and strategy earn him \$millions each year.

Nintendo followed up its previous successful consoles with the introduction of the **Nintendo Switch**, a revolutionary hybrid of a home console and a portable system. Meanwhile, online storefronts such as Xbox Live Marketplace and the Wii Shop Channel changed the way people purchased games and kept software updated.



And finally of course, there was **Fortnite** which Epic Games launched in 2017 to fast become the most popular game in the world. Although free-to-play, in-game purchases alone generated \$1bn within the first year. By the end of the decade it had over 250m players and had generated \$5.1bn in revenue.

The global gaming market was valued at \$300bn in September 2021: a figure that Nolan Bushnell and Jim Stein could surely not have imagined in their wildest dreams when they joined forces to make the first computer game fifty years earlier.

The Catalyst Cohort 2021

Southampton Science Park celebrates welcoming its eleventh cohort of ambitious entrepreneurs to its Catalyst business accelerator.

Adoor is overturning the property market with a joined-up, easy and on-demand way to track the process of buying and selling homes.

Founders:
Michael Wadsworth,
Ian Jones

What's the big idea?

Adoor connects everyone involved in a house move to create a central source of truth so everyone's aligned, stress is reduced and property transactions can be finalised faster.

Why is this important?

Moving home has become a stressful and extended process. A house move takes an average of 22 weeks to complete (compared to 8-12 weeks a decade ago). During this time, estate agents and conveyancers spend around 7 hours each week reacting to calls and emails from people chasing for updates – time that could be better spent progressing and speeding up transactions.

Who will benefit?

Home buyers, sellers and property professionals including estate agents, property lawyers, mortgage and insurance companies, removal companies and utilities providers. It is offered free to buyers and sellers.

Did you know?

In 2019, 30% of moves failed, costing movers approximately £274m in fees. 16% specifically failed due to poor, delayed or lack of communication.

Find out more:
adoor.co.uk



Attracting attention and demonstrating our benefits and value to attract more clients are critical success factors for us moving forward. This is why we were ecstatic to learn that we had been accepted onto the Catalyst programme, a nationally recognised accelerator, well respected by the previous cohorts it has supported. This is a huge opportunity for the team to continue to learn and grow as people and continue to push company growth.



ES Consulting is improving supply chain efficiency and profitability with a new level stock control and warehouse management system.

Founder: Hugh Smith

We already have a fully developed application and a small customer base, but I know that effective marketing is going to be a challenge for us now so I'm excited about what Catalyst may lead to.

What's the big idea?

ES Consulting's revolutionary Barcoder 250 Cloud warehouse management system delivers a comprehensive warehouse management solution, boosts productivity and performance by ensuring stock levels are accurate at all times and that orders are delivered in the most efficient and accurate way possible. It promises to enable warehouse operators to get ahead of their competition and provide a better customer experience while saving very many thousands of pounds per year.

Why is this important?

Warehouse management software is the only way to run a warehouse efficiently. Warehouses today need to be modernised to meet customer expectations and keep up with the pace of the marketplace.

Who will benefit?

Any business that has warehousing operations will benefit from this integrated system which has been developed to interface seamlessly with Sage 50, Sage 200 and Sage Manufacturing software.

Find out more:
warehouse-management.co.uk

ANAMAD



ANAMAD is revolutionising technology that will remove persistent organic pollutants from water without adding chemicals.

Founders:
Sergey Mikhailovsky,
Matthew Illsley

What's the big idea?

Advanced Nanostructured Materials Design and Consultancy (ANAMAD) has developed a cost-effective way to decontaminate fresh water and wastewater from organic pollutants including bacteria and viruses, microorganisms and microplastics.

Why is this important?

Access to clean water is often thought of as a right but water poverty continues to exist. Although the UN has a Sustainable Development Goal that is centred on the provision of water that is safe to drink, some 785m people still lacked even a basic drinking water service in 2019.

Who will benefit?

Anyone without access to a centralised drinking water supply and organisations that wish to reduce the cost of wastewater treatment. The company is already working with several countries that have been offered development assistance by the British government to develop their water supply infrastructure.

Did you know?

60% of countries are unlikely to reach the United Nations' target of full integrated water resources management by 2030.

Find out more:
anamad.co.uk

We are looking forward to participating in the Catalyst programme. We are excited about taking our product development to a new level and designing an exploitation plan to progress reaching more customers and end-users. Convincing customers of the superiority and cost-effectiveness of our technology will be key to this.

Gera.Solutions is helping export companies to improve sales through consistent and effective communications across all platforms.

Founders:
Anita Gera

What's the big idea?

Gera.Solutions provides language and translation support to help companies communicate consistently and effectively about their goods or services in multiple languages in such a way that everyone in their target group understands and appreciates.

Why is this important?

Around a quarter of the world's 1.5bn population speaks English but only about 400m of these use it as a first language. The consequence is that many potential sales are lost because company communications are simply 'lost in translation'.

Who will benefit?

SMEs trading across geographies that are looking to improve market penetration and image within the UK, Europe, and the USA.

Find out more:
gera.solutions.com



We have had a successful first year and need to better understand how to market our services as well as consider all the options for scaling up. Through Catalyst, we would like to better understand business requirements in the UK, to see more SMEs profit from our expertise and to be further along our journey to becoming a larger company with the ability to offer stable, permanent and full-time employment to suitable staff.

Nirray is redefining security and safety with LiDAR and geospatial detection solutions within the built environment and transport sectors.

Founder: Matthew Jensen

What's the big idea?

Nirray has developed an enhanced security, surveillance and safety solution for commercial buildings, assets and fleets. Utilising specialist expertise in 3D light detecting and ranging (LiDAR) scanning technology and geospatial solutions, the company will focus on hardware enablement and the integration of intelligent software platforms, as well as developing its own advanced applications for end-users, to help reduce crime.

Who will benefit? The built environment, infrastructure and transport sectors will gain value in terms of reducing risks. Should a threat be detected, the characteristics of the technology improve data audit trails, of significant benefit to asset managers and owners.

Why is this important?

Vandalism and theft are on the rise across many industries. In the construction sector, 92% of industry professionals claim they experience crimes of this nature yearly, monthly or even weekly. Some are professionally planned and executed, making prevention and response more challenging and, as CCTV systems are solely dependent on photographic imaging, providing proof of location,

volumetric impacts and movement tracking is near impossible.

Did you know?

Construction site theft alone costs the sector in excess of £80m each year.

Find out more:
nirray.com



“We are delighted to have the opportunity to draw upon Catalyst’s established start-up, commercial and operational expertise to steer and optimise the Nirray business proposition towards growth. We need help to strengthen and clarify our business model and develop a customer/market strategy to gain traction with potential customers.”



“We felt excited and proud to get onto the Catalyst programme. We believe that it will be a cornerstone for the future success of OhmSpace. With the support of the programme, we are aiming to close seed round funding, establish an OhmSpace base at the Science Park and refine our business plan for efficient execution, laying the foundations for a high growth and valuable business.”

OhmSpace, a spin-out from the University of Southampton, is disrupting the space market with a new satellite propulsion system.

Founders:

Federico Romei, Matt Robinson, Chris Ogunlesi

What's the big idea?

OhmSpace is looking to design, manufacture, assemble, test and deliver faster electric propulsion for satellite manufacturers and operators. It has removed the dependence on hazardous chemical propulsion, instead using a higher thrust-to-power ratio electric system. This not only removes toxicity but delivers a faster return on investment.

Why is this important?

The space industry is evolving from large and costly platforms to global constellations of thousands of identical satellites of the size of washing machines. This is creating a growing need for propellant-efficient space propulsion solutions that are not toxic, expensive or hard to integrate.

Who will benefit?

This approach is set to disrupt the burgeoning constellation market for satellite manufacturers, operators and integrators with a primary market being constellations of microsatellites.

Did you know?

The global satellite manufacturing market was valued at \$12.5bn in 2019 and is due to double by 2030.

Find out more:
ohm.space



“Having invested in, and installed, our first scale production line, I now need to navigate the business towards large scale production. Our ultimate aim is to be the market leader in the UK for ready meal trays. That's why I'm pleased to be able to participate in this programme at Southampton Science Park. I am sure it will be challenging and will help me to grow both my capabilities and the company.”

KCC is supporting single-use plastic reduction targets with a revolutionary approach to food packaging.

Founder:

Kevin Clarke

What's the big idea?

KCC has found a way to manufacture low carbon, high temperature food trays which deliver a viable alternative to single use plastic trays predominantly used with ready meals. The process creates a moisture barrier that enables the tray to last for longer than the required 10-14 day shelf life while still remaining rigid during cooking up to 240°C.

Why is this important?

Ready meal trays are predominantly made of fossil fuel based crystallised polyethylene terephthalate (CPet) and use unsustainable, high carbon production methods. CPet is not currently recycled in significant numbers due to the food contamination that such trays have and an overreliance on consumers to separate materials post-use.

Who will benefit?

Producers and retailers across the food industry who are looking for viable alternatives to CPet to reduce their dependence on single use plastics in line with consumer and regulatory expectations and demands. Certificated to food safety regulations and fully recyclable, the approach could enable food manufacturers to achieve their sustainability targets faster.

Did you know?

In the UK alone it is estimated that 2bn plastic trays are used each year just for convenience ready meals.

Find out more:
kccpackaging.com

OTB Vendors is looking to improve profitability and service levels in the hospitality sector with a unique self-service bar.

Founders:

Patrick Songore, Michael Jobson

What's the big idea?

OTB has devised an automated bar which will improve serving capacity without sacrificing space in hospitality venues such as bars, pubs and nightclubs, and at festivals. With a footprint of just 1m², it does the work of 6 bartenders, alleviating long queues, increasing customer spend per head and improving profit margins by reducing wastage. It is controlled by bartenders using a web-based server, enabling them to serve more people without physically pouring drinks.

Why is this important?

Long queues, product wastage and customer dissatisfaction all affect revenue potential. On average, bars and pubs lose 12% of their product on wastage so reducing this wastage and re-distributing the flow of the venue by offering more serving points has huge potential. It will also help alleviate the staffing crisis that the hospitality industry is facing. The sector predicts a need to recruit 1.4m people to replace the 900,000 unhappy staff who have left and to mitigate the impacts of the pandemic.

Who will benefit?

Nightclub owners are the primary targets for this technology before expanding into adjacent markets.

Did you know?

Britons wait an average of 9 minutes for a drink inside a bar or a nightclub.

Find out more:
otbvendors.co.uk



“We have a lot to achieve during our Catalyst tenancy. We hope to have a fully working product that is deployed in some beta venues so that we can ensure our technology is reliable and efficient when used by customers. We plan to extract as much knowledge as possible from the mentors and workshop leaders on the Catalyst programme to help us achieve this and get to market efficiently.”

The UK's Hydrogen Strategy

Colourless, odourless, non-toxic, and highly combustible, hydrogen is the most abundant chemical substance in the universe, constituting roughly 75% of all normal matter.

In August, the UK Government published a long-awaited Hydrogen Strategy, expanding on the commitments made in the Prime Minister's 2020 Ten Point Plan for a Green Industrial Revolution.

What is it all about?

The Strategy outlines how, by 2030, the Government plans to attract £4bn of private investment into the generation, storage and use of this energy source, and in so doing, create jobs and reduce emissions.

The aim is to scale up production because government analysis suggests that 20-35% of our energy consumption could be hydrogen-based and it is therefore a critical component in achieving net zero emissions by 2050.

The strategic approach is based on previous success with offshore wind, where early government action, coupled with strong private sector backing, earned the UK a world-leading status. Here, a Contracts for Difference scheme, incentivised investment in renewable energy by protecting developers and customers from volatile wholesale prices.

"This home-grown clean energy source has the potential to transform the way we power our lives and will be essential to tackling climate change and reaching net zero. With the potential to provide a third of the UK's energy in the future, our strategy positions the UK as first in the global race to ramp up hydrogen technology and seize the thousands of jobs and private investment that come with it."

Secretary of State for Business, Energy and Industrial Strategy, Kwasi Kwarteng

Why is it important?

The Hydrogen Strategy promises to deliver benefits to both environment and economy.

This abundant natural gas is a key enabler of decarbonisation. In the UK, it could deliver emissions savings equivalent to the carbon captured by 700m trees by 2032. It can also play an important role in helping us to transition away from fossil fuel use, particularly in energy-intensive industries like chemicals, oil refineries, power, and heavy transport like shipping, HGV lorries and trains.

At the same time, a low carbon, hydrogen-based economy could be worth £900m and create over 9,000 high-quality jobs by 2030. This could rise to 100,000 jobs and be worth up to £13bn by 2050.

"As a leader in high skilled manufacturing, and with an extensive legacy in energy production, the UK stands perfectly positioned to capitalise on the opportunities provided by hydrogen. [It] is an area where the UK can lead by example on the global stage, showcasing the value of strong partnerships between government and the private sector on the road to reducing emissions."

Chief Policy Director at CBI Matthew Fell

Any drawbacks?

Currently, yes and they are two-fold.

While hydrogen does not produce emissions at the point of use, it is not a completely green option because 95% of all hydrogen produced globally derives from fossil fuels. However, hydrogen produced from clean sources is currently a great deal more expensive. This is why the government is trialling a twin-track, 'green and blue' approach. Green hydrogen involves separating water with an electrolyser powered by renewable energy while blue hydrogen involves using natural gas and capturing the majority of emissions from the processes with man-made technologies.

There's also the transition to a hydrogen fuelled economy to consider. A trial conducted by Northern Gas Networks delivered in partnership with Keele University, Cadent and Progressive Energy, saw a 20% hydrogen blend injected into an existing gas network with no detrimental impact to customers. However, as soon as the blend exceeds 23%, there is a need for new appliances which come with financial cost, disruption to homes and businesses, and a carbon footprint all of their own.

Companies that are working on upgrading domestic and industrial building heating infrastructure, boats, trucks, buses and planes to adapt to higher proportion hydrogen blends stand to benefit.

Where is it going?

Globally, hydrogen is likely to account for 10% of the world's final energy consumption by 2050. The proportion will be higher in marine transport (50%), road transport (25%) and aviation (25%) than other sectors, with building heating behind the average at just 5%.

In the UK, there's now a clear roadmap for rollout. Look out for a Hydrogen Neighbourhood launch as soon as 2023, followed by a Hydrogen Village in 2025 and then the first town running entirely on hydrogen soon after.

The Ten Point Plan for a Green Industrial Revolution

The Prime Minister's ten points, which focus on building back better, supporting green jobs, and accelerating our path to net zero, are built around the UK's strengths. Launched in November 2020, the plan covers:

1. Offshore wind: Producing enough offshore wind to power every home, quadrupling how much we produce to 40GW by 2030, supporting up to 60,000 jobs.
2. Hydrogen: Working with industry aiming to generate 5GW of low carbon hydrogen production capacity by 2030 for industry, transport, power and homes, and aiming to develop the first town heated entirely by hydrogen by the end of the decade.
3. Nuclear: Advancing nuclear as a clean energy source, across large scale nuclear and developing the next generation of small and advanced reactors, which could support 10,000 jobs.
4. Electric vehicles: Backing our world-leading car manufacturing bases including in the West Midlands, North East and North Wales to accelerate the transition to electric vehicles, and transforming our national infrastructure to better support electric vehicles.
5. Public transport, cycling and walking: Making cycling and walking more attractive ways to travel and investing in zero-emission public transport of the future.
6. Jet Zero and greener maritime: Supporting difficult-to-decarbonise industries to become greener through research projects for zero-emission planes and ships.
7. Homes and public buildings: Making our homes, schools and hospitals greener, warmer and more energy efficient, whilst creating 50,000 jobs by 2030, and a target to install 600,000 heat pumps every year by 2028.
8. Carbon capture: Becoming a world-leader in technology to capture and store harmful emissions away from the atmosphere, with a target to remove 10MT of carbon dioxide by 2030, equivalent to all emissions of the industrial Humber today.
9. Nature: Protecting and restoring our natural environment, planting 30,000 hectares of trees every year, whilst creating and retaining thousands of jobs.
10. Innovation and finance: Developing the cutting-edge technologies needed to reach these new energy ambitions and make the City of London the global centre of green finance.

H₂
HYDROGEN
ENERGY
STORAGE

SAFE SPACE

Time to Wake Up to Cybercrime

Between January and May 2021, organisations as diverse as the Colonial Pipeline Company, Fat Face, Kaseya, Serco, the University of Portsmouth and Wentworth Golf Club suffered serious cybercrime attacks and were forced to hand over tens of millions of pounds between them in ransomware to mitigate reputational and operational impacts.

Why is this happening? What do cyber criminals want? And are SMEs shielded from the problem?

Cybercrime is intensifying. In 2020, it cost organisations \$1tn. By the end of 2025, the forecast is that it will have reached \$10.5tn annually; the rise of cryptocurrency and newfound 'opportunities' arising from homeworking both serving to heighten the risks.

Motivation for this kind of extortion is not always financial though. An attack could just as easily be driven by ideology or politics, as state-sponsored attacks gain pace and 'hacktivists' seek to get their voice heard.

It's time to wake up to the fact that cybercrime is now serious and organised crime, no longer a hobby for individuals seeking infamy. Hackers have come of age, selling their services to the highest bidder to achieve top salaries of around £100,000: it has become a very lucrative career choice.

Almost anybody can become a cybercriminal now too, because even if they don't have the skills to build the tools themselves, everything they need is available online. Ransomware is available as SaaS, and phishing kits, including instructions and the necessary code required to run a campaign, can be purchased to create fake landing pages in an instant. Tools for smishing, malvertising, watering holes and web attacks are all there for anyone who knows how to access them.

These resources lurk in the Dark Web. Shockingly, some 4.3bn credentials are for sale here and this restricted area of the net accounts for 50% more traffic than the surface web that most of us use on a daily basis.

"SMES IN THE UK ARE ATTACKED EVERY TEN SECONDS ON AVERAGE, SO IT'S NO LONGER A QUESTION OF 'IF' BUT 'WHEN'"

It's tempting to think that if you're a small enough fish then you're probably swimming under the radar of these sophisticated criminals but cybercrime expert Chris Mouncey of MSNet says that this isn't the case: all companies, big or small, must now work on the concept of zero trust.

"SMEs in the UK are attacked every ten seconds on average, so it's no longer a question of 'if' but 'when'", he says. "Even though their financial reward may be less than if they were to target a corporate, cybercriminals know that most SMEs are the 'low-hanging fruit'. This is because SMEs are the gateway to bigger fish further up their supply chain and they're easy targets.

"Most small companies are blissfully unaware of the risks, they spend less on IT and they don't train their staff to spot a potential problem. Unfortunately, it takes just one unsuspecting employee to give away a great deal and it could be as simple as them opening an email."

Become a Digital Detective

Chris advises that everyone should take twenty seconds to review every email they receive before acting on it. There are seven golden clues to look for:

- 1 Ask yourself if you are expecting this email. If not:
- 2 Notice overly generic content and greetings like 'Dear valued customer'.
- 3 Examine the senders' email domain for anomalies such as typos or random numbers.
- 4 Look out for misspellings and odd phrasing which are often ways to bypass spam filters.
- 5 Mouse over links to see if the destination matches what the email promises.
- 6 Be on your guard for any sense of urgency or demanding actions.
- 7 Take a moment before opening attachments which is usually where viruses lurk.

Finally, ensure that any information entered onto a webpage has a secure https URL.

This is a fast-moving arena. Access support and keep up to date via the National Cyber Security Centre (ncsc.gov.uk), and the Computer Security Resource Centre (csrc.nist.gov) in the US.

"IT TAKES JUST ONE UNSUSPECTING EMPLOYEE TO GIVE AWAY A GREAT DEAL AND IT COULD BE AS SIMPLE AS THEM OPENING AN EMAIL"

A multi-layered approach to improving your company's security culture.

- Train your staff on the risks of cybercrime. MSNet can help with this.
- Make sure the right people have appropriate access to systems. Safeguard passwords and user credentials, and use two factor authentication.
- Ensure devices are protected with trusted Endpoint Security.
- Use good incremental data back-up services.
- Keep software updated and patched.
- Filter emails and attachments and apply the seven golden email rules.
- Have a plan. Know what to do in the event of an attack – who to inform and how to get back up and running.

Future Towns: Here and Now

The new Future Towns Innovation Hub for the region took a step closer to becoming a reality when esteemed guests Michael Queen (Chair of EM3 LEP) and Prof Mark E Smith (Vice Chancellor UoS) visited Southampton Science Park for a topping out ceremony for its new Engineering Centre, due to complete in spring 2022.



Professor Mark E Smith (far left), President and Vice-Chancellor of the University of Southampton, addresses the project team during the Engineering Centre topping-out ceremony.

The new Engineering Centre will provide the opportunity for business and enterprise to co-locate with the world leading expertise, skills and facilities from the University of Southampton that will be embodied in the Future Towns Innovation Hub, creating an environment that nurtures creativity and innovation.



The Hub will be housed within Southampton Science Park's new Engineering Centre, providing specialist laboratory facilities and a collaboration zone that will support a range of sectors such as eco-hydraulics, electronics, transport research, aerospace, energy and unmanned systems. Comprising offices, workshops, laboratories and open access collaboration space over three floors, suites within the Engineering Centre can be configured to meet individual business needs.

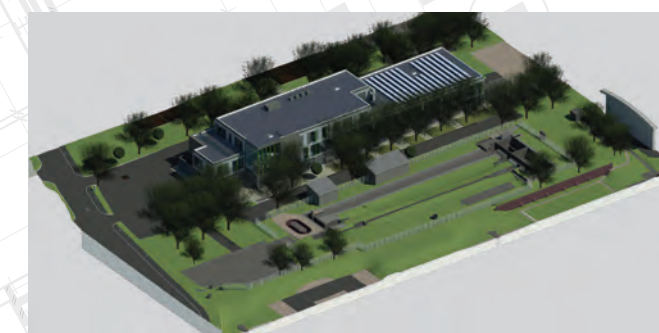


"We look forward to providing an environment in which the creativity and innovation needed to solve complex interdisciplinary challenges faced by our local towns will be nurtured. The Hub will provide access to state-of-the-art experimental apparatus and laboratories in which local business and enterprise will be able to develop relationships and collaborate with world leading academics to enhance the sustainability, health, happiness and prosperity of our urban environments. The insights gained and technologies generated by these activities will have far reaching impact and benefit to the UK and wider global community." Professor Paul Kemp, Academic Director of the Future Towns Innovation Hub

"The Science Park is already a magnet for the commercialisation of research and new technologies in the M3 corridor and it is therefore uniquely positioned to host this new facility, and to create further collaboration opportunities through our networks. I'm absolutely confident that the positive societal impacts arising from this new centre will resonate significantly beyond our boundaries and for generations to come." Dr Robin Chave, CEO, Southampton Science Park

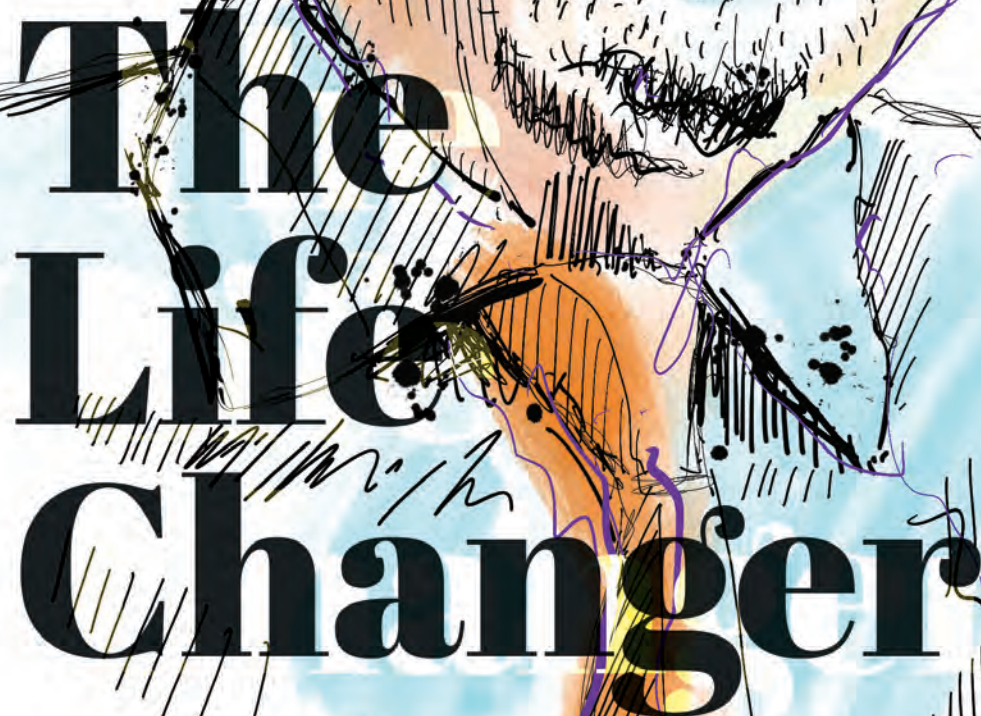


"EM3 is committed to ensuring our towns can meet the demands of the modern world by providing a sustainable, high quality of life for all those who live and work in them. The Future Towns Innovation Hub will offer world-leading engineering research excellence from the University of Southampton to business partners and town leaders to provide opportunities and practical solutions to real problems, including some of our greatest environmental challenges." Michael Queen, Chair of Enterprise, M3 LEP



"This is a very important investment from the University that will help further our commitment to become a fully civic university. The centre will help to grow and retain local talent and maximise the impact of our research related to the environmental and sustainability challenges faced by local towns and their businesses. I look forward to the collaborative work we will complete with businesses throughout our community." Professor Mark E. Smith, President and Vice-Chancellor, University of Southampton

To benefit from a presence within this new prestigious setting, contact Southampton Science Park on 023 8212 6580



The Life Changer

Curiosity, Collaboration and Covid: It's all in a day's work for Derek McCall, Managing Director of Promega UK

Promega Corporation was founded in 1978 to provide restriction enzymes to laboratory scientists to support their life science research. Now, the company is known the world over for its thousands of market-leading products which are used by life scientists, in academic research, clinical diagnostics, as well as biotechnology companies, and the pharmaceutical industry.

Here in the UK, Southampton Science Park is proud to be Promega's home. The company here is managed by Derek McCall who offers his reflections on what makes a successful business and a successful career.

Derek, many congratulations on reaching your twenty-year anniversary with Promega. What is it about this company that has kept you so engaged for so long? Thank you for the recognition! I joined Promega in 2001 after an eleven-year spell working in the USA. I have worked for a total of four companies during my career and Promega has been the best by a country mile. The company is privately owned, allowing us to focus on technological innovation with high levels of investment in research and development, and most importantly, our people.

Promega continues to be led by Bill Linton, its Founder and Chief Executive, a very inspiring person. Bill thinks differently to most CEOs. He creates a learning experience every time you are in his presence. He lets his general managers run their respective businesses and this alone is very motivating – no-one outside of our immediate organisation is trying to steer the UK branch ship!

The life sciences sector is fast moving and must have changed dramatically during your career. How has the market for your products and services changed (in broad terms)? When I joined Promega, we were mainly a supplier of a catalogue range of molecular biology reagents and kits selling to government and university laboratories. Over time, our business has expanded and now covers reagent tool kits and integrated systems (instrument platforms for automated solutions) for laboratory testing in the fields of cell biology, nucleic acid and protein analysis, drug development, human identification, and molecular diagnostics.

We sell to four key customer segments: academic/government, pharmaceutical/biotechnology, clinical/hospital and forensics and paternity testing. Our clinical diagnostic business is our most recent development and is making strong headway in the field of companion diagnostics as a treatment decision pathway for oncologists working with blockbuster drugs like Keytruda from Merck Sharp and Dohme.

And how have you personally kept abreast of developments, challenges and opportunities? We have dedicated sales teams for each of the key customer segments we sell in to and our key account managers are PhD qualified in life sciences. They have a responsibility to keep us fully informed about changes taking place in their respective markets and they work closely with product managers and technical services scientists. Working in these cross-functional teams keeps our finger on the pulse pretty well.

Over the last couple of years, Promega has played an important role in the fight against Covid-19, serving research, pharmaceutical and diagnostics laboratories. To what extent did you need to pivot the business to be sufficiently agile to cope with this unexpected demand and how did you achieve this? Yes, this is correct. Our role in the global Covid battle was to supply diagnostic testing laboratories with automated solutions for viral ribonucleic acid (RNA) extraction from human swab samples, and to supply critical components to diagnostic kit manufacturers in bulk custom reagent format.

Globally, Promega has revenues in excess of \$750m, offers over 4,000 products, has 669 issued and pending patents and employs more than 1,800 people.

“There is something very special about the atmosphere here and the Science Park management has been very supportive over the years as our business has expanded”

I think the team here in the UK and at our headquarters in the US responded magnificently to the Covid related challenge. Here, we teamed up with the NHS and the Department for Health and Social Care, as well as diagnostic kit manufacturers to agree supply contracts quickly and efficiently. We are proud to say that we met every single contractual obligation we took on.

Our biggest challenges were ramping up manufacturing to cater for a huge surge in demand as well as maintaining fully functioning logistics channels during the lockdown upheavals. During 2020 our global revenues rose by around 70% and this has continued in to 2021. While demand for core products not related to Covid fell away significantly in 2020, I am pleased to report that this has reverted to pre-pandemic levels.

Reflecting on this period, and knowing what you know now, what advice would you have given yourself and your team?

Interesting question! Looking back, I would say the only issue we struggled with was workload, particularly in sales, customer service and logistics. With hindsight, we might have tried to spread the workload to ease the burden on some of our team.

Collaboration and curiosity are founding pillars of Promega. How do you and your team approach and embrace this?

To a significant extent, we are R&D and technology led. We work hard to engage with customers and potential customers at the senior scientist level, such that we become an organisation of Promega scientists talking to customer scientists. This collaboration may be wide ranging in terms of exploring opportunities to combine our respective expertise to find better solutions, or it can be highly specific in nature, working to solve a particular problem or challenge.

Our CEO drives collaboration by asking his general managers to agree on annual management by objectives (MBO) that focus on bringing companies to the table that want to collaborate with us. As an example, this year I have an MBO that requires me to bring four companies into our Global Strategic Alliance Program. Our CEO and VP of R&D both get personally involved in these initiatives.

You're a familiar face at Southampton Science Park, having located the business here decades ago and, more recently, choosing to build custom accommodation to support Promega's growth here in the UK. What is it about the Park that drew you initially and how has it continued to serve your business's needs? We have been at Southampton Science Park since 1989, occupying leased office and laboratory space until mid-2019 when we moved into our own newly built facility.

I cannot really say what attracted us at the beginning, but I do know that when we embarked upon the project to build our own facility roughly five years ago, we went on numerous excursions with Savills Commercial Real Estate to help us explore options on the South Coast. Every time we returned here to the Park, we felt as though we had come home. There is something very special about the atmosphere here and the Science Park management has been very supportive over the years as our business has expanded.

Personally, I am a keen runner and love the trails that can be found so close to our facility!

Based on your formidable and valuable experience, what leadership advice would you offer founders and managers of innovative UK companies looking to grow on the world stage?

My one piece of advice would be to have the confidence to hire the very best into your organisation. Focus on the areas of business that you recognise as weaknesses in yourself and plug those key gaps through well planned recruitment and retention processes, and don't be afraid to hire people that are 'better' or more experienced than you. When your business reaches a certain size, you need to think carefully about your people and how to manage them successfully – in the end that will drive your success.

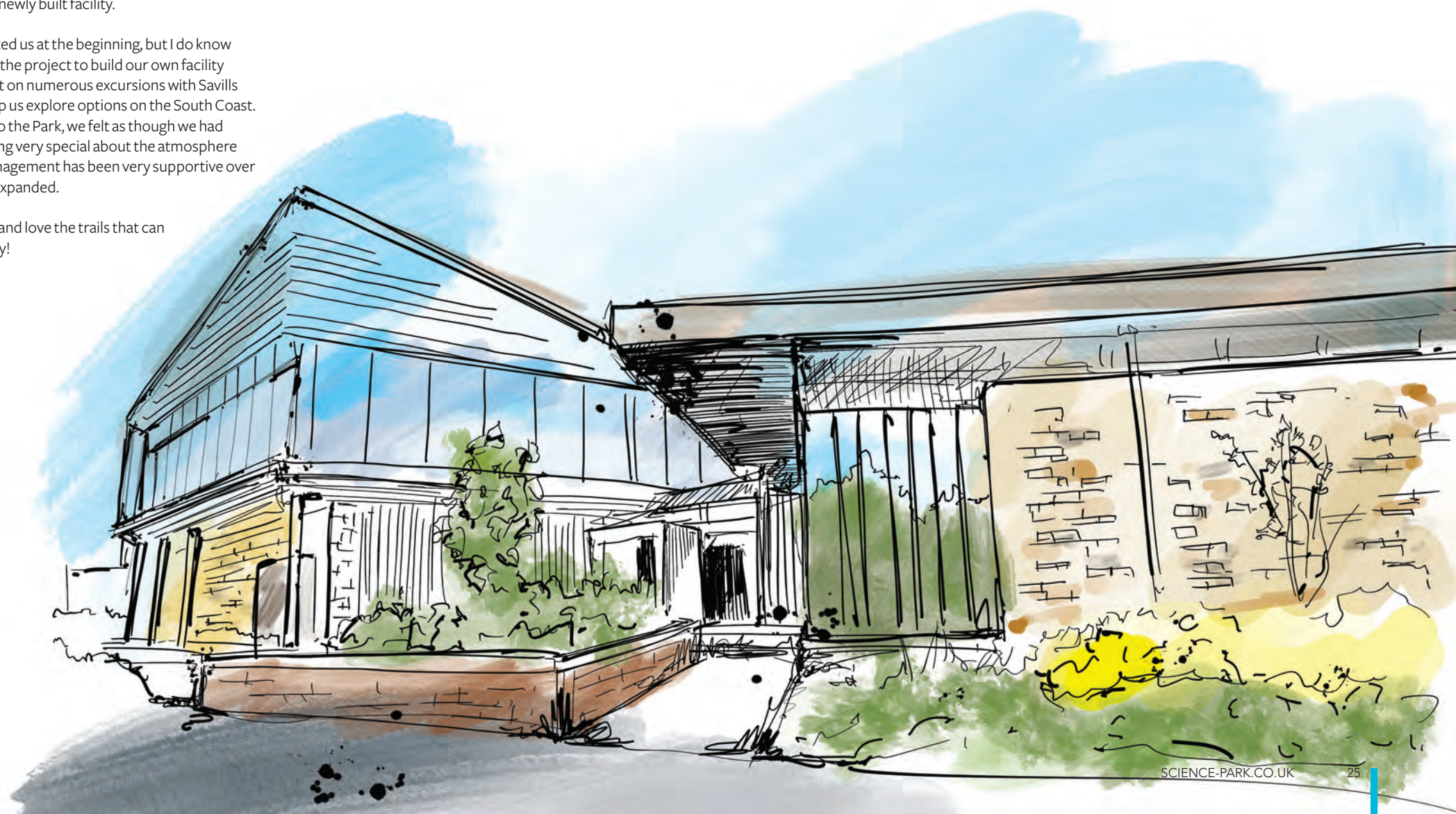
And what about those just starting out in their careers? What advice would you give them? Over time, I have interviewed many people for roles in organisations and so many come ill-prepared for the interview discussion or process. If you are going to seek a new role, and you really like the sound of a particular position, prepare for it and then prepare again. You can never be too prepared for a discussion that could change your life, literally.

Finally, what do you believe is the key to personal success?

Very few people succeed in business at any level without hard work and focus. In my early career, I was, in part, driven by a fear of failure: at the age of 29, I was relocated by the company I worked for at the time (Johnson Matthey PLC) to the US and was subsequently involved in two US-based relocations as my career progressed. I think a lot of people would possibly shy away from these moves, but I chose to go for it, and I like to think it worked out.

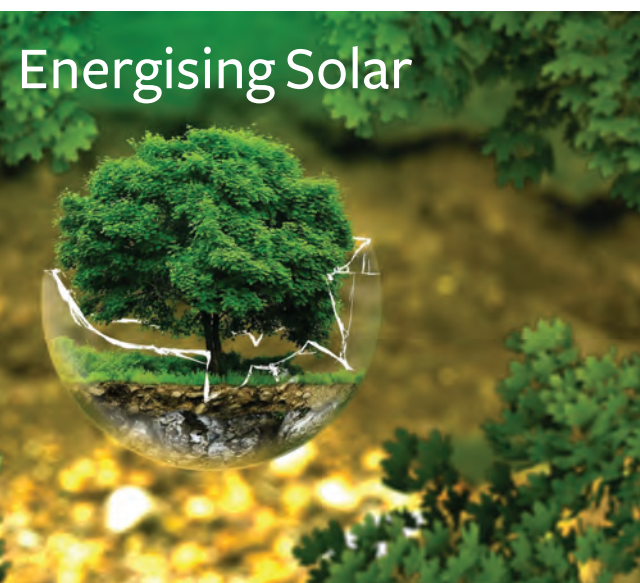
Two other things that can really help are having a mentor that genuinely has your career development at heart and a good dose of luck as well!

promega.com



ON THE PARK

News from the Southampton Science Park Community



Energising Solar

Absolar has been named a winner in the 2021 British Data Awards, scooping the prize for PropTech of the Year. The British Data Awards help to discover and celebrate organisations that are passionate about data, no matter their size. Organisations that took part this year included FTSE 100 giants, tech unicorns, innovative start-ups, public sector bodies and not-for-profit organisations.

Absolar helps organisations and households to evaluate the feasibility of buildings for renewable solar energy faster and more accurately than has been possible before. Its latest AI-driven solar feasibility project in Portsmouth is now live, allowing every resident to see their solar feasibility, for free.

The company recently welcomed three interns to the team. In celebration of the 'positive energy and wonderful ideas' they contributed, they planted a tree at the Science Park to offset the carbon emissions associated with their employment.

absolar.co.uk

Pursuing Purpose

Critical Software has achieved certification as a B Corporation, joining a growing group of companies reinventing business by pursuing purpose and not just profit.

Certified B Corporations are for-profit companies using their power to build a more inclusive and sustainable world. Achieving certification is the result of meeting demanding sustainability and impact standards across the entire business in five key areas: governance, workers, community, environment and customers.

Gonçalo Quadros, Chairman of Critical Software, commented: "A global shift is underway, with purpose-driven companies looking to address society's greatest challenges more actively and to contribute towards building a more transparent, sustainable economy. We are proud to achieve B Corp certification and to join this powerful global movement which uses business as a force for good. This is a major milestone and reflects our ambition to help make the world a better and safer place. From recent initiatives like our neurodiversity

talent programme to our commitment to become carbon negative, we plan to build on our B Corp status to help engineer positive, sustainable change: for our communities and the planet at large."

criticalsoftware.com



Accelerating Defence

AccelerComm has licensed its 5G Physical Layer intellectual property, which reduces error rates and maximises spectral efficiency of satellite, cellular and other communications networks, to the US Defense Advanced Research Projects Agency (DARPA).

The company's physical layer product portfolio includes complete channel coding IP solutions that deliver reduced latency, high-reliability, and low power consumption for the most critical components of the 5G physical layer. Its packages can be quickly integrated and flexibly delivered for use in custom silicon, programmable hardware, or as software solutions, covering all use cases within current standards.

"High-performance, high-reliability, spectrally-efficient communications systems are critical in today's world in both civilian and defence applications," said Rob Barnes, Chief Commercial Officer at AccelerComm. "We are delighted to have been selected for the DARPA Toolbox initiative to bring our deployment proven IP from the worlds of 5G and satellite to help researchers develop advanced and innovative projects."

accelercomm.com



Attracting Visitors

Semantic has helped launch a new London attraction, Chaos Karts, an innovative experience that merges augmented reality and go-karting in a unique way so that it feels like you're racing in a video game. Competitors are able to collect power-ups to get the edge on their rivals and compete in an unlimited number of tracks thanks to unique project mapping technology. For customers' online journey, Semantic created all the pre-launch branding and design elements and a website with theming, animations and movement important aspects to convey.

The company also worked to support The Crystal Maze Live Experience in London and Manchester. Based on a popular '90s TV show, the attraction brings it to life with exciting challenges and tricks to create an immersive adventure.

"We have all been locked down, on and off for over 15 months and the virus has touched all of us in one way or another. Visitor attractions need to be prepared for the post pandemic world, not only in terms of social distancing, but in terms of overall consumer behaviour for finding a fantastic day out, gathering information, building an itinerary, booking and receiving Covid related information. Our likelihood to queue or make spontaneous decisions has diminished greatly and the proportion of advanced bookings has more than doubled in that period with many visitor attractions only taking advanced bookings," commented Peter Oliver, Commercial Director at Semantic.

semantic.co.uk

Tackling Cholesterol

The **Academic Health Science Network** is collaborating on a new education programme for healthcare professionals to tackle cardiovascular disease.

Tackling Cholesterol Together is a national professional education programme supporting the NHS England and NHS Improvement 3-year lipids workstream to raise awareness amongst healthcare professionals that cardiovascular disease is preventable, yet it currently kills 136,000 people every year.

The programme will support healthcare professionals to address under-diagnosis and under-treatment at scale and use new models to manage cholesterol, underpinned by an updated NICE endorsed pathway, with certificates issued for completion of all content. It will be delivered through videos, podcasts, webinars, expert clinics and online modules. Topics covered range from statin intolerance to behavioural change, Familial Hypercholesterolaemia, novel therapies on the horizon, and much more.

ahsnnetwork.com



NEWS FROM

UNIVERSITY OF Southampton



Present-day continental arc volcano in the Kamchatka Peninsula, Russia.
Photo: Dr Tom Gernon

Earth's Safety Valve

University scientists have led a global study to discover that extensive chains of volcanoes have been responsible for both emitting and then removing atmospheric carbon dioxide (CO₂), thus acting as a geological thermostat at the Earth's surface.

The team explored the combined impact of activities in landmasses, oceans and atmosphere over the past 400m years and constructed a novel 'Earth network' using machine-learning algorithms and plate tectonic reconstructions to unravel the complexity of Earth's interlinked processes.

The study casts doubt on a long-held belief that Earth's climate stability is 'a geological tug of war' between landmasses and the seafloor. Instead, it suggests that the natural break-down of rocks at Earth's surface via volcanoes (known as chemical weathering) is critically important because the products of this weathering – elements like calcium and magnesium – are flushed via rivers to the oceans where they form minerals that lock up CO₂.

"Unfortunately, the results do not mean that nature will save us from climate change", stresses research lead Dr Tom Gernon. "Today, atmospheric CO₂ levels are higher than at any time in the past 3m years, and human driven emissions are about 150 times larger than volcanic CO₂ emissions. The continental arcs that appear to have saved the planet in the deep past are simply not present at the scale needed to help counteract present-day CO₂ emissions".



Healthier Food Choices

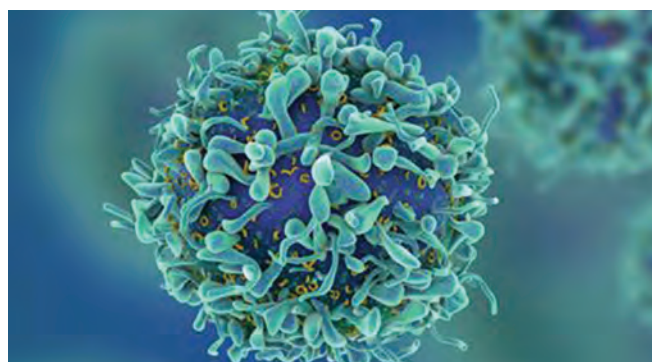
Altering supermarket layouts helps people make healthier food choices and could shift the population towards the government's dietary recommendations, confirmed a comprehensive study led by the University's Dr Christina Vogel in partnership with Iceland Foods Ltd.

Replacing confectionery and other unhealthy products at checkouts and the end of nearby aisles with water and non-food items and placing fruit and vegetables near store entrances prompts customers to make healthier food purchases. This could lead to nearly 10,000 extra portions of fruit and vegetables and approximately 1,500 fewer portions of confectionery being sold on a weekly basis in each store. Matt Downes, Head of Format Development at Iceland said: "We know that childhood obesity is a growing issue and the retail industry has its part to play in tackling this. We hope that the outcomes of the study provide insights for the wider retail industry and policy makers about the impact of store merchandising on purchasing decisions."

Nature's Cancer Therapy

Blood cancer experts at the University and antibody engineering experts at the biopharma company UCB have found a way to enhance the natural ability of therapeutic antibodies to attack blood cancer cells by using part of the human immune system known as the complement cascade. The research paves the way for a potential new class of treatments.

The new technology harnesses a natural feature of Immunoglobulin M (IgM), an antibody with naturally high levels of complement activation, and builds this property into Immunoglobulin G (IgG) antibodies, which are preferred for the treatment of human diseases. This approach combines the best features of both antibody types into a single molecule, making it attractive as a 'plug-and-play' modification tool for the cancer research community allowing them to improve the performance of existing antibodies or create 'bio-betters' from existing therapeutics.



Promega's custom built UK headquarters at Southampton Science Park

PARK IN
FOCUS

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- A unique community of like-minded people?
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